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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,093	03/23/2006	Nicholas Peter Franks	YOUZ 2 00116	8953

27885	7590	06/19/2007
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EXAMINER	
ARNOLD, ERNST V	

ART UNIT	PAPER NUMBER
1616	

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/573,093	Applicant(s) FRANKS ET AL.	
	Examiner Ernst V. Arnold	Art Unit 1616	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 20-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 20-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/23/06</u> . | 6) <input type="checkbox"/> Other: ____.  |

**DETAILED ACTION**

Claims 2-19 and 45 have been cancelled. Claims 1 and 20-44 are pending.

**Comments:**

1) At the top of page 1 of the specification, please insert: This application is a 371 of PCT/GB04/04298 filed on 10/11/2004 and claims benefit of foreign applications United Kingdom 0323861.5 filed on 10/10/2003 and United Kingdom 0418539.3 filed on 08/19/2004.

2) In claim 40, line 2, "aesthetic" is a misspelling of anesthetic.

3) In claim 40, lines 2-3, proper Markush language is "selected from the group consisting of".

***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Information Disclosure Statement***

The information disclosure statement filed 3/23/06 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered. Specifically, DE 19933704 A1 has not been considered and a line has been drawn through it.

***Claim Objections***

Claim 38 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 20 already recites a therapeutically effective amount of xenon.

***Claim Rejections - 35 U.S.C. §§ 101 and 112, Second Paragraph***

The following are quotations of 35 U.S.C. §§ 101 and 112, second paragraph, respectively, which form the basis of the claim rejections as set forth under this particular section of the Official Action:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 42 and 43 are rejected under 35 U.S.C. § 101 as being drawn to use claims, which are non-statutory process claims, as defined in 35 U.S.C. § 101. See, *Ex parte Dunki*, 153 USPQ 678 (Bd. App. 1967). In addition, claims 1, 42 and 43 are also rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. More specifically, a claim is rendered indefinite when said claim merely recites a use without any active, positive steps delimiting how this use is actually practiced. See MPEP 2175.03(q). As a result, the Applicants

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are respectfully required to redraft the aforementioned use claims as statutory process claims that delimit active, positive steps on how to use a composition according to the invention as originally filed.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 39 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 20 requires a therapeutically effective amount of xenon. It is contradictory to administer a sub-therapeutic amount which would not have a therapeutic benefit and therefore Applicant is not enabled for sub-therapeutic amounts of xenon.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 39 recites the limitation "sub-therapeutically effective amount" in line 2. There is insufficient antecedent basis for this limitation in the claim. Claim 20 requires that xenon is administered in a therapeutically effective amount.

*Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 20-38, 40, 41 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fishman (US 5,099,834) in view of Georgieff (US 6,197,323) and Taylor et al. (Pediatric Research 2002, 51(1), 13-19) and Ohashi et al. Anesthesiology 2002, 96, A1291.

Applicant claims a method of treating neonatal asphyxia in a mammal in need thereof comprising administering a therapeutically effective amount of xenon to the mammal; and subjecting the mammal to hypothermia.

**Determination of the scope and content of the prior art**  
**(MPEP 2141.01)**

Fishman teaches administration of xenon gas mixtures, from 60 to 78.5 mole percent xenon, to women of childbearing age (Abstract and claims 1-14). Fishman teaches that nitrous oxide is toxic to a fetus (column 1, lines 49-60). Fishman teach a mixture consisting of from 60 to 78.5 mole percent stable xenon, from 19.5 to 38 mole percent oxygen and from 2.5 to 20.5 mole percent helium (Claim 1). Methods of making and methods of using the gas mixture are disclosed (Column 3, lines 14-42 and column 5, lines 8-36) and use of the gas mixture in combination with intravenously introduced methyl-atrophine bromide, thiopentone and fentanyl (Column 5, lines 10-13). It is the Examiner's position that any xenon administered to pregnant women would also be administered to the unborn child.

Georgieff teaches liquid anesthetic lipophilic gas preparations and methods of inducing analgesia comprising xenon and in a fatty emulsion (excipient/carrier) that can be administered intravenously or by inhalation (Abstract; column 9, lines 10-16; column 10, lines 22-65 and claims 16). Georgieff teach ointments and creams which can be applied to the damaged tissue thus reading on transdermal application (column 9, lines 40-54). Georgieff teaches that any known inhalation anesthetic, such as sevoflurane, desflurane and isoflurane, can be combined with the xenon fatty emulsion (Column 8, lines 9-16). Sub-anesthetic amounts are also contemplated by Georgieff (Column 7, lines 33-40).

Taylor et al. teach improved neuroprotection with hypothermia following cerebral hypoxia-ischemia in the rat (title). Taylor et al. teach cooling the rat to brain temperatures of 30 C or 33 C for up to 12 hours after hypoxia (Abstract). Cooling between 6 and 12 hours after

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hypoxia-ischemia is more effective in reducing cerebral injury than other cooling regimes (Abstract). Taylor et al. teach that the results have implications for application in birth asphyxia (Page 19, left column middle of page).

Ohashi et al. disclose treating newborn Fischer rats, to test the antinociceptive effect of xenon, with either air or xenon ( $\pm 75\%$  v/v). Air is a diluent and carrier for the xenon.

### **Ascertainment of the difference between the prior art and the claims**

#### **(MPEP 2141.02)**

1. Fishman does not expressly teach a method of treating neonatal asphyxia in a mammal in need thereof comprising administering a therapeutically effective amount of xenon to the mammal and subjecting the mammal to hypothermia; 20 to 70 % v/v xenon/air mixture; administration of xenon in the form of a lipid emulsion or where xenon is administered by perfusion, intravenously, neuraxially or transdermally; simultaneously, sequentially or separately with hypothermia; where the temperature is maintained from about 33 to about 35 C; for a period of at least 6 hours after the hypoxic-ischemic insult; for a period from about 6 to about 24 hours after the insult; administration of xenon to the mother prior to labour, administration of xenon to the mother prior to, or during labour for up to 24 hours prior to birth in a therapeutic; and where the xenon is co-administered with an anesthetic selected from isoflurane, sevoflurane and desflurane.

### **Finding of prima facie obviousness**

#### **Rational and Motivation (MPEP 2142-2143)**



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1. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to combine the methods of Fishman and Taylor et al. to arrive at a method of treating neonatal asphyxia in a mammal in need thereof comprising administering a therapeutically effective amount of xenon to the mammal and subjecting the mammal to hypothermia wherein there is a xenon gas mixture of 20 to 70% v/v xenon air, as suggested by Ohashi et al., or administer the xenon in the form of lipid emulsion intravenously, as suggested by Georgieff, by perfusion, simultaneously, sequentially or separately with hypothermia; where the temperature is maintained from about 33 to about 35 C, as taught by Taylor et al., for a period of at least 6 hours after the hypoxic-ischemic insult; for a period from about 6 to about 24 hours after the insult, as taught by Taylor et al., administration of xenon to the mother prior to birth, administration of xenon to the mother prior to, or during labour for up to 24 hours prior to birth in a therapeutic or sub-therapeutic amount, as taught by Georgieff, and where the xenon is co-administered with an anesthetic selected from isoflurane, sevoflurane and desflurane, as taught by Georgieff, and produce the instant invention.

One of ordinary skill in the art would have been motivated to do this because: 1) Fishman teach administration of xenon to women of child bearing age for protection of the unborn child and 2) Taylor et al. suggest hypothermic treatment in rescue therapies of birth asphyxia (page 19, middle of page). One of ordinary skill in the art would select and administer the xenon to the mother or the newborn mammal to avoid the risk of toxic nitrous oxide to the newborn mammal. It is merely a matter treatment choice by one of ordinary skill in the art to select when to administer the xenon, in which form, such as an emulsion, in combination with other medicaments and at what temperature and duration to maintain the hypothermia. Ohashi et al.

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suggest  $\pm 75\%$  xenon/air mixture and it is merely routine optimization to arrive at the instantly claimed 70% xenon/air mixture. One of ordinary skill in the art would recognize other means of providing analgesia to a patient such as intravenous administration of xenon in a carrier as taught by Georgeiff. One of ordinary skill in the art would be motivated to use xenon, in such alternative forms in addition to inhalation, because nitrous oxide is taught by Fishman to be toxic to an unborn mammal. So, one of ordinary skill in the art would be motivated to administer a therapeutically effective amount of xenon to women of childbearing age, and thus the unborn child as well as directly to the child once born. The route of administration and timing of administration is easily determined by one of ordinary skill in the art. The unborn mammal would intrinsically benefit from any properties of the gas.

Objective evidence of nonobviousness, if any, must be commensurate in scope with that of the claimed subject matter. In re Kulling, 14 USPQ2d 1056 (Fed. Cir. 1990); In re Lindner, 173 USPQ 356 (CCPA 1972).

In light of the forgoing discussion, the Examiner concludes that the subject matter defined by the instant claims would have been obvious within the meaning of 35 USC 103(a).

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention.

Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

*Conclusion*

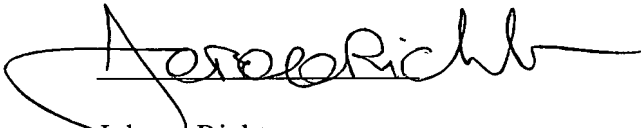
No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernst V. Arnold whose telephone number is 571-272-8509. The examiner can normally be reached on M-F (6:15 am-3:45 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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